

EXPLANATION OF PLATE III.

1. Venation of ♂ *Philobia ulsterata*. *
2. Hind leg of ♂ *Macaria*. *
3. Hind leg of ♂ *Philobia*. *
4. Genitalia of ♂ *Philobia amulataria*. *
5. Genitalia of ♂ *Philobia ulsterata*. *
6. Genitalia of ♂ *Philobia versitata*. *
7. Genitalia of ♂ *Philobia perplexata*. *
8. Genitalia of ♂ *Philobia aspirata*. **

REPORT ON A COLLECTION OF CRANEFLIES
(TIPULIDÆ, DIPT.) FROM THE COLOMBIAN
ANDES, TAKEN BY MR. JOHN
THOMAS LLOYD.

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A rather extensive collection of craneflies taken by Mr. John Thomas Lloyd on the central chain of the Andes in southwestern Colombia, March, 1912, was handed to me for study. The types have been deposited in the Cornell University collection, where the remainder of the Andean insects are preserved; certain of the paratypes are in the author's cabinet. Mr. Lloyd and Dr. A. A. Allen, whose bird collections have been considered in a recent paper by Frank M. Chapman,² undertook this trip along the Cordillera Central in the spring of 1912. The itinerary of the expedition as originally planned was much more extensive, but serious illness in the party prevented collecting after leaving the "Valle de las Papas."

The collection embraces some 125 specimens referable to 22 species, of which 15 are herein described as new. The only published paper which considers craneflies from this altitude of the Andes is by von Röder, "Dipteren von der Cordilleren in Columbien."³

The following data regarding the localities collected in was furnished by Mr. Lloyd and Dr. Allen.

¹ Contribution from the Entomological Laboratory, Cornell University.

² Bull. Am. Mus. Nat. Hist., Vol. 31, Art. 16, pp. 139, 140.

³ Victor von Röder, Stett. Ent. Zeit., Vol. 47, pp. 257-270 (1886).

Valle de las Papas, "the valley of potatoes," on the Cordillera Central of the Andes near the summit at an altitude of about 10,000 feet. The Rio Caqueta, one of the principal tributaries of the Upper Amazon, flows through the valley. The valley spreads out as a flat expanse several miles in width, the surface sparsely overgrown with a tall grass suggesting prairie grass, in the wet places replaced by rushes closely allied to *Scirpus*; bog mosses, *Sphagnum* sp., occurs abundantly almost everywhere except in the wooded places. At various spots, especially in the neighborhood of the river, clumps of scattered trees occur, with numerous bushes in between; these trees resemble mesquite and have comparatively little moss. It was from amongst these tree clumps that most of the craneflies labelled "Valle de las Papas" were taken. It is possible that some came from the "cloud" or "moss" forest on the slopes above the valley, as in a few places the edge of the "cloud" forest came close up to the tree clumps, though in most instances it was at least one eighth of a mile away.

The floral, avifaunal and climatic conditions of the valley are almost exactly the same as those occurring above tree line in the true paramo; however, it is at a much lower altitude (10,000-10,300 feet) than the true paramo (12,600 feet and over) and is separated from the latter by a cloud forest belt of varying width. Ecologically the flora of the paramo is a psychrophytic or cold soil formation;¹ it is described as being a subglacial fell field "supporting a typical, open vegetation, the individuals of which are scattered in small tufts, and display growth-form exactly corresponding to those in northern fell-fields; cushion-like growth is perhaps more common. . . . Despite great humidity, frequent rain and mist, which the sun may suddenly dissipate, the vegetation is xerophytic, as Göbel's descriptions demonstrate; many plants occur with pinoid, cupressoid, juncooid or woolly-haired leaves." Besides a large number of Holarctic genera of plants, there are many genera peculiar to the region; the most notable single plant of the paramo is probably the "great frailejon," *Espeletia grandiflora* Humb. et Bonpl., a remarkable Composite plant growing 6 to 8 feet in height; a good figure of *Espeletia* is shown in Engler und Prantl² and in Plate I of this article.

The "cloud" forest or "moss" forest which surrounds the valley

¹ Eug. Warming, *Ecology of Plants*, Sec. 9, pp. 258-259, 1909.

² Die Natürlichen Pflanzenfamilien, Vol. 4, Pt. 4, p. 217, Fig. 109.

is always overhung by clouds; it is a region of very heavy and almost constant precipitation: during the time when the collection was made it rained almost continuously every day. Trees are abundant and thickly draped with a dense covering of moss, with an abundance of ferns and vines and many orchids, the whole composing a dense tangle through which passage must be cut with a knife. (See Plate IV, lower figure.)

Almaguer, 20 miles west of the "Valle de las Papas"; the village of that name is at an altitude of about 7,500 feet, but the craneflies so labelled were taken in the vicinity of a camp on the mountain ridge west of the village, at an altitude of 10,500 feet. This is in the "moss" forest and most of the insects were obtained along a trail cut through the forest; in the open places *Sphagnum* grows commonly and blue-berries with non-edible woody fruit occur in abundance along the trail wherever trees have been removed.

Popayan, 40 miles N.N.E. of Almaguer, at an altitude of 6,500 feet; this is below the level of the "cloud" forest and is largely open country with savannah conditions, open hills with little woods except along the rivers.

The collection by species is as follows:

Subfamily LIMNOBINÆ.

Tribe LIMNOBINI.

Genus DICRANOMYIA Stephens.

1. *Dicranomyia elegantula* new species.

Allied to *gloriosa* Alex.; wings dark brown on anterior half, with large white spots, posterior half almost clear.

Male, wing, 7.5 mm.

Female, length, 6.8 mm.; wing, 8.4 mm.

Rostrum and palpi dark brown; antennæ dark brownish black, the segments of the flagellum rounded; front, vertex and occiput yellowish brown, the median line a little darker, the region adjoining the eye a little brighter, yellowish.

Mesonotal præscutum medially dark brown, a broad triangular patch of yellowish gray bloom on the sides of the sclerite just behind the pseudosuture, the point of the triangle directed inward, on the sides of the sclerite in front of the pseudosuture the color in certain lights is very dark, velvety black, in

other lights almost white; scutum dark brown with a paler bloom along the front margin; scutellum dark brown with a diamond-shaped patch of gray bloom in the middle; postnotum brown. Pleuræ black, the mesopleuræ largely covered with a silvery white bloom, a narrow brown stripe cuts across this patch from the cervical sclerites to the scutellum. Halteres whitish, with the knob brown. Legs with the coxæ and trochanters brown, femora light yellow, rest of the legs gone. Wings with the anterior half brown with rounded white spots, a series of about eight in the radial cell, a large spot at the end of *Sc*, extending caudad to the radial sector, other spots in cell *2nd R*₁ and *R*₂. The caudal cells of the wings are almost hyaline with scattered brown markings, a brown suffusion along *Cu* and its fork, in cell *1st A* and on the anal angle of the wing. Venation: *Sc* long, *Sc*₂ at its tip; *Rs* long, much longer than the very long deflection of *R*₄₊₅; inner ends of cells *R*₃ and *Cu*₁ almost in a line. (See Pl. 2, fig. 2.)

Abdomen brown.

Holotype, ♀, Almaguer, March 11, 1912.

Allotype, ♂, with the type.

The allotype has the femora much darker, brown, narrowly tipped with yellowish.

D. elegantula approaches *gloriosa* Alex.¹ (Guatemala) in its long *Sc* and general coloration; the venation, especially as regards the long deflection of *R*₄₊₅, is very different; the pale color of the anal cells is a conspicuous character.

In regard to the patches of pollen occurring on the thorax of this group of species, it should perhaps be stated that this varies considerably in different lights and the student must take this factor into account.

2. *Dicranomyia cordillerensis* new species.

Subcosta long, thorax brownish yellow, wings pale brownish with scanty brown spots.

Female, length, somewhat shrunken, 7.6 mm.; wing, 11.2 mm.

Rostrum and palpi dark brownish black; antennæ dark brownish black, the flagellar segments oval, gradually more elongated toward the tip; head gray.

Mesonotal præscutum shiny brownish yellow, becoming more brownish behind; scutum, scutellum and postnotum dark brown. Pleuræ dull brownish yellow. Halteres long, pale, knob darker. Legs, coxæ and trochanters dull light yellow, remainder of the legs broken. Wings, pale brownish, cells *C* and *Sc* rich yellow; a conspicuous brown spot at the origin of *Rs*, a smaller one at the tip of *Sc*, a very large stigmal blotch, indistinct seams on the crossveins

¹ C. P. Alexander, Canadian Entomologist, November, 1912, pp. 337, 338; Pl. 11, fig. *j*.

and deflections of veins which make up the cord and the outer end of cell *1st M*₂. Venation: *Sc* long, extending far beyond the origin of *Rs*, *Rs* angular and spurred at origin, almost straight beyond the angulation, deflection of *R*₄₊₅ short. (See Pl. 2, fig. 1.)

Abdominal tergites brown, sternites yellowish, the sclerites suffused with brown behind and on the sides.

Holotype, ♀, Valle de las Papas, March 29, 1912.

Agrees most closely with *D. ornatipennis* Blanchard (Chile), but the wing pattern, as described for the latter, is different, the crossveins not margined with darker. *D. lincicollis* Blanchard is a much smaller species, with a dark lateral, thoracic stripe.

3. *Dicranomyia andicola* Alexander.

1912. *Furcomyia andicola* Alexander, Can. Ent., December, 1912, p. 362; Pl. 11, fig. h.

Three males and one female from Almaguer, March 11, 1912.

The ventral lobes of the male hypopygium are conspicuous, yellow, produced into a short, rounded protuberance near the base on the inside and here with two long slightly curved, pointed spines; lower or cephalic side of this protuberance with a comb of long bristles. Ventral projections of the pleura very elongate, cylindrical, the base narrowed. Dorsal apical appendage of the pleura very stout, short, strongly curved. Caudal margin of the 9th tergite concave.

4. *Dicranomyia insignifica* Alexander.

1912. *Furcomyia insignifica* Alexander, Can. Ent., December, 1912, p. 363; Pl. 11, fig. i.

About 40 specimens, both sexes, from Almaguer, March 11, 1912, and Valle de las Papas, March 22 to 29, 1912.

The 9th tergite of the male hypopygium has a deep median notch on the caudal margin; pleuræ very short, the inner face beset with stout spines, near the middle produced into a chitinized arm which is provided with spines at short intervals and is tipped with long hairs; pleura with two apical appendages, the dorsal one very short, about as long as the pleura and strongly curved; the ventral appendage very large, fleshy, very much larger than the pleura, its inner margin near the base with a small protuberance bearing two stout spines, on the ventral margin cephalad of these spines are three large bristles; pleura with a large rounded lobe on the ventral side. (See Plate 3, fig. 1.)

5. *Dicranomyia longiventris* new species.

Male, length, 7.3 mm.; wing, 8 mm.; abdomen, 6.8 mm.

Rostrum yellowish, palpi pale brown; antennæ dark brownish black, flagellar segments oval, more elongated toward the tip of the organ; head gray.

Mesonotal præscutum light yellowish brown, a broad brown median stripe with a narrower lateral stripe on either side behind joined to the caudal end of the median stripe; scutum with the lobes dark brown, median line whitish; scutellum and postnotum yellowish brown. Pleuræ pale, dull whitish. Halteres very long, brown, the knob a little darker. Legs long, brownish. Wings subhyaline, stigma feebly indicated; venation (see Pl. 2, fig. 3): Sc_1 very long, R_s short, about as long as the deflection of R_{4+5} , but much more arcuated.

Abdomen very long and slender, tergites dark brown, the lateral and caudal margins of the sclerites narrowly pale, yellowish; sternites pale, dull yellowish. Hypopygium with the 9th tergite oval, the latero-caudal angles broadly rounded, the caudal margin slightly concave. Pleuræ short and stout, the dorsal apical appendage long, slender, simple, ending in a sharp curved point; the ventral appendage is a fleshy lobe much longer than the pleura; from the base of this lobe is borne another chitinized appendage which is enlarged at its base, deeply bifid at its tip, one of the two teeth obtuse and ending in long hairs, the other shorter and pointed; midlength of this arm are two pointed spines; this appendage is apparently borne by the base of the fleshy ventral lobes. From the ventral side of the pleura projects a conspicuous fleshy lobe bearing long hairs; guard of the penis uniform in width, a little pointed at the tip. (See Pl. 3, fig. 2.)

Holotype, ♂, Valle de las Papas, March 29, 1912.

Allotype, ♀, with the type.

Paratypes, 6 ♂, 2 ♀, Valle de las Papas, March 22 to 29, 1912.

D. longiventris belongs to the *halterata* group (*halterata* O. S., *particeps* Doane, *simillima* Alex., et al.) with very long Sc_1 and exceedingly long halteres. The extremely long abdomen easily separates it from these allied forms.

Genus **GERANOMYIA** Haliday.

6. *Geranomyia* sp.

One specimen from Almaguer, March 11, 1912, in too poor condition to determine. It belongs to the group of species containing *rostrata* Say, *insignis* Loew, etc.

Tribe ANTOCHINI.

Genus ATARBA Osten Sacken.

7. *Atarba columbiana* new species.

General color yellow, wings broad with the stigma indistinct, femora with a brown subapical ring.

Male, length about 6 mm.; wing, 7.8 mm.

Female, length, 5.5 mm.; wing, 7.4-7.8 mm.

Rostrum brownish yellow, palpi very dark brown; antennæ elongated, the segments of the flagellum elongate-oval, antennæ light yellowish brown, with a dense white pubescence; head light yellowish gray.

Mesonotal præscutum rather shiny, dull yellow, without apparent stripes, sometimes with a brown suffusion; remainder of the mesonotum similar. Pleuræ light yellow. Halteres short, stem pale, knob darker. Legs bright yellow, femora with a conspicuous brown ring just before the tip, tarsi with segments 2 to 5 and the tip of segment 1 brown. Wings subhyaline, iridescent, stigma indistinct, veins in the costal region yellow, others brown. Venation (see Pl. 2, fig. 4): *Sc* short, *Sc*₁ ending opposite the origin of *Rs*; *Sc*₁ about five times as long as *Sc*₂; cell 1st *M*₂ about square; basal deflection of *Cu*₁ beyond the fork of *M*.

Abdominal tergites dark brown, the hypopygium a little brighter colored, sternites yellowish brown.

Holotype, ♂, Almaguer, March 11, 1912.

Allotype, ♀, with the type.

Paratypes, 1 ♂, 1 ♀, with the type.

A. columbiana differs from all of the known species of the genus in its brown femoral rings. As I have indicated in previous papers, the species of *Atarba* described by de Meijere, Williston and others are not members of this genus but aberrant species of the Eriopterine genus *Gonomyia*.

Tribe ERIOPTERINI.

Genus GONOMYIA Meigen.

8. *Gonomyia andicola* new species.

Basal flagellar segments swollen, thoracic dorsum dark clove brown, pleuræ with a broad yellowish band, wings tinged with darker.

Male, length, 5 mm.; wing, 6.6 mm.

Female, length, 5.5 mm.; wing, 7.3 mm.

Rostrum and palpi dark brownish black; antennæ dark brownish black, scapal and four basal segments of the flagellum enlarged, oval, the remaining flagellar segments abruptly becoming elongate-oval; head dark brownish gray.

Mesothoracic dorsum dark clove brown without distinct darker stripes, lateral margin of the sclerite narrowly bright yellow, extending from one wing-base to the other, broadest in front; scutum dark brown; scutellum dull yellow, postnotum brown. Pleuræ dark brownish gray, with a broad oblique band, yellowish in some lights, whitish in others, extending from above and behind the posterior coxæ towards the cervical sclerites, ending on the mesopleuræ. Halteres pale, knob brown. Legs, coxæ light brown, darker basally, remainder of the leg dark brown. Wings suffused with darker, veins dark brown. Venation (see Pl. 2, fig. 6): *Sc* long, ending rather far beyond the origin of *Rs*, fork of R_{2+3} long, about as long as its petiole, veins issuing from cell 1st M_2 long, basal deflection of Cu_1 before the middle of cell 1st M_2 .

Abdomen dark grayish brown. Male hypopygium (see Pl. 3, fig. 3) with the 9th tergite produced into a prominent median lobe which is deeply notched. Pleural pieces elongate-cylindrical, the dorsal inner angle produced entad into a short subchitinized arm; from the end of the pleura is a strong, curved, chitinized hook, directed entad and cephalad, a few short hairs at intervals along this hook; behind the chitinized hook is a straight fleshy appendage directed caudad; gonapophyses long, straight, directed caudad, at the tip somewhat twisted and strongly chitinized, before the tip on the inner face, with a strong curved spine; guard of the penis long and slender, scarcely enlarged at the tip, which is truncated.

Holotype, ♂, Valle de las Papas, March 29, 1912.

Allotype, ♀, with the type.

Paratypes, 13 males, 4 females, with the type.

Genus **ERIOPTERA** Meigen.

Subgenus **MESOCYPHONA** Osten Sacken.

9. **Erioptera (Mesocyphona) sp.**

Two specimens, ♂, ♀, from the Valle de las Papas, March 29, 1912, not in proper condition to determine more accurately.

Subgenus **ERIOPTERA** Meigen.

10. **Erioptera (Erioptera) andina** new species.

Brown, the pronotal scutellum light yellow, legs brown, wings suffused with brown, halteres brown at the tip, the stem pale.

Male, length, about 4 mm.; wing, 6 mm.

Female, length, 4.7 mm.; wing, 6.3 mm.

Rostrum, palpi and antennæ dark brown; front, vertex and occiput dark brownish.

Pronotal scutellum light yellow, showing off conspicuously against the dark brown of the rest of the thorax. Mesonotal præscutum dark brown, lateral edges of the sclerite paler, occupying the region before the pseudosutural fovea; remainder of the mesonotum dark brown. Pleuræ dark plumbeous brown. Halteres large, stem pale yellowish, knob brown. Legs, coxæ and trochanters dull yellow, remainder of the legs brown. Wings with a faint brown suffusion, stigmal region elongate, brown, veins brown. Venation (see Pl. 2, fig. 5).

Abdomen dark brown. Male hypopygium (see Pl. 3, fig. 6). The 9th tergite is a quadrate plate with its caudal margin broadly emarginate, the edge with small teeth. Pleural pieces rather long, cylindrical, the inner ventral angle produced into a lobe, the tip of the pleurites bearing long hairs; two apical appendages, both chitinized, the ventral one slender basally, more enlarged and irregularly spatulate at the tip; the dorsal appendage long, slender and acutely pointed at the tip. The apophyses consist of a median quadrate plate with its caudal margin straight or nearly so, produced into indistinct points at the lateral angles; on either side of this plate is a slender chitinized rod directed caudad.

Holotype, ♂, Valle de las Papas, March 29, 1912.

Allotype, ♀, with the type.

Paratype, ♂, with the type.

This is the first neotropical species of the subgenus to be described.

Genus **MOLOPHILUS** Curtis.

11. **Molophilus perseus** new species.

Male antennæ short, thorax light yellowish brown, wings nearly hyaline, veins light yellow, male hypopygium with the lower pleural lobe provided with a strong chitinized appendage which is serrated on the caudal margin.

Male, length, 4.8 mm.; wing, 6.2 mm.

Female, length, 5-5.3 mm.; wing, 6.8-7.6 mm.

Rostrum and palpi dark brown; antennæ with the basal segment yellow, the remainder of the antennæ dark brown, the flagellar segments elongated; head dark brown.

Thoracic dorsum light yellowish brown without distinct stripes, extreme margin of the præscutum pale yellowish white; scutum and scutellum brown, postnotum dark brown. Pleuræ dark brown. Halteres light yellow. Legs light yellow, hind and middle tarsi darker. Wings subhyaline, veins light yellow, especially bright along the costa and at the base of the wing.

Abdomen dark brown. Male hypopygium (see Pl. 3, figs. 4 and 5) with the pleural pieces very short and broad, divided by a membranous notch into two lobes; viewed from above with an oval lobe projecting caudad, this lobe concave on its dorsal inner face and here provided with a strong chitinized

U-shaped hook, the inner edge of the lobe produced into a less chitinized hook. Viewed from beneath, the pleura has a lower lobe separated from the dorsal one by membrane; this lower lobe is provided with a powerful chitinized appendage ending in a long straight point, the caudal or outer edge with prominent, regular teeth, the inner or cephalic margin of this appendage with a few long bristles near the base.

Holotype, ♂, Valle de las Papas, March 29, 1912.

Allotype, ♀, with the type.

Paratypes, 1 ♂, 2 ♀, with the type.

Genus **TRIMICRA** Osten Sacken.

12. *Trimicra* sp.

One female from the Valle de las Papas, March 29, 1912; it is in too poor condition to determine beyond the genus.

Tribe LIMNOPHILINI.

Genus **EPIPHRAGMA** Osten Sacken.

13. *Epiphragma cordillerensis* new species.

Thorax with five dark lines, one being median, femora with a conspicuous subapical brown ring with indications of a second, postmedian ring, wings light brown with darker ocellate markings.

Male, length, 7.2-8 mm.; wing, 9-9.4 mm.

Female, length, 10-10.8 mm.; wing, 10.3-12.8 mm.

Rostrum and palpi dark brown; antennæ with the scapal segments dark brownish black, the rather enlarged first segment of the flagellum bright orange-yellow, remaining segments of the flagellum dark brownish black; front, vertex and occiput dark brown, a pale buff margin along the eyes and two buff spots on the occiput.

Præscutum with a broad brown median stripe, which continues to the suture; sides of the sclerite a little darker, region between these brown markings with a golden yellow bloom; scutum light yellow, the center of each lobe and the median depression brown; scutellum grayish brown with a median brown stripe; postnotum gray with a brown median stripe and a rounded brown spot on either side near the end of the basal half. Pleuræ grayish, a dark brown stripe extending from the head across the cervical and pronotal sclerite to the metathorax. Halteres rather long, pale, the knobs a little darker. Legs with the coxæ yellowish, the extreme base traversed by a dark brown band, trochanters brownish yellow, femora yellowish, darkening to brown before the tip, a subapical or apical ring of yellow, tibiæ brownish yellow, tarsi brown. Wings with a dull yellow suffusion and with abundant brown ocellate

markings, the largest at the origin of *Rs*, with numerous other marks in all the cells; a series of five subequal oval spots in cell *2nd A*. Venation as in Pl. 2, fig. 8.

Abdominal tergites brown, sternites dull yellow, the extreme lateral margin brown.

In some specimens the only mark on the yellow femora is the broad subapical brown band.

Holotype, ♂, Popayan, March 1, 1912 (by sweeping).

Allotype, ♀, Valle de las Papas, March 22, 1912.

Paratypes, 3 ♂, 1 ♀, with the allotype.

In my key to the American species of *Epiphragma*¹ this would run down to *solatrix* Osten Sacken of the eastern United States, from which it differs in the much more ocellate character of the wing pattern and other characters.

Genus **OROMYIA** new genus.

(non *Oreomyza* Pokorny, Wien. Ent. Zeit., Vol. 6, 1887).

Antennæ of the male elongated, the scapal segments greatly swollen, globular, the elongate first segment of the flagellum arising abruptly from the last scapal segment, flagellar segments much elongated, the whole antennæ about as long as the body; there are only 12 antennal segments in my unique specimen, but the total number is very probably 16. Tibiæ with two long, slender spurs. Wings with subcosta short, ending opposite the origin of the radial sector; the sector is short, arcuated; *R*₂ short, oblique, crossvein *r* lacking. Male genitalia with the 9th sternite produced caudad into a conspicuous lyri-form plate.

Type of the genus, *Oromyia lloydi* new species.

In my key to the Limnophiline genera² *Oromyia* would run down to *Phyllolabis* Osten Sacken³ of the western Nearctic fauna, which is presumably its nearest ally, both genera agreeing in the lack of crossvein *r* and cell *M*₁. They may be separated by the following key:

1. Subcosta very long, ending opposite the fork of *Rs*; *R*₂ not oblique and as long as *R*₂₊₃; crossvein *m* prominent as long as *r-m*; basal deflection of *Cu*₁ very far distad, so that *Cu* and *M* do not fuse. Male genitalia with the 8th sternite bearing a pale foliaceous appendage, broad at the base,

¹ C. P. Alexander, Proc. U. S. Nat. Mus., Vol. 44, No. 1966, p. 535.

² Alexander, Proc. U. S. Nat. Mus., Vol. 44, No. 1966, p. 525.

³ Osten Sacken, Western Diptera, Bull. U. S. Geol. Survey, Vol. 3, pp. 202, 203 (1877).

narrower on the apical half and very deeply split medially. Male antennæ of the normal Limnophiline type, the flagellar segments not elongated, the antennæ reaching about to the wing-base.

Phyllolabis Osten Sacken.

Subcosta short, ending opposite the origin of R_s ; R_2 very short, oblique, simulating a crossvein; crossvein m short, tending to be obliterated by the long second deflection of M_3 ; basal deflection of Cu_1 under the middle of the square cell 1st M_2 . Male genitalia with the 9th sternite produced caudad into a conspicuous lyriform plate. Male antennæ elongated, as long as the body *Oromyia* new genus.

14. *Oromyia lloydi* new species.

Thorax dull yellow; wings subhyaline with a large stigma.

Male, length, 5.5 mm.; wing, 6.8 mm.; antennæ, about 6 mm.

Hind leg, femur, 5.6 mm.; tibia, 5.2 mm.; tarsus, 4.2 mm.

Rostrum and palpi dark brown; antennæ with the scape and the extreme base of the first flagellar segment reddish yellow, remainder of the antennæ dark brownish black; front and clypeus brown, with a gray bloom; front, vertex and occiput gray.

Thoracic dorsum dull yellow without distinct stripes; pleuræ more brownish yellow. Halteres yellow, knob broken. Legs, coxæ and trochanters light yellow, femora light yellow at base, darkening rather abruptly into brown; tibiæ and tarsi brown. Wings subhyaline, stigma rather square, brown; veins dark brown. Venation as in the genus. (See Pl. 2, fig. 7.)

Abdomen with the two basal tergites dark brown, 3d to 5th yellowish basally, brown apically; remaining segments brown. Sternites with the second segment brown with a rounded yellowish median spot; segments 3 to 6 brown, the basal portion yellowish, this covering about one half on segment 3 and about one fourth on segment 6; remaining sternites dark brownish black. Hypopygium with the 8th sternite produced caudad into a long cylindrical protuberance which is thickly covered with long hairs; 9th sternite broad at the base, at the tip produced into a chitinized lyriform appendage, this appendage directed caudad, at the apex of each arm bearing a dorsally directed slender hair-like point. Pleural pieces broad at the base, narrowed and truncated at apex, clothed with long dense hairs; two chitinized apical appendages, the dorsal one cylindrical, somewhat enlarged at the tip; ventral appendage stouter, produced into a long hook at the apex, on the lower face with numerous appressed teeth. (See Pl. 3, figs. 7-9.)

Holotype, ♂, Valle de las Papas, March 29, 1912.

The type of this new genus is named in honor of the collector, Mr. J. T. Lloyd.

Genus **LIMNOPHILA** Macquart.15. **Limnophila lloydi** new species.

Color of the head and thorax light gray, wings hyaline, with four costal blotches of brown, the largest near the tip of the wing, other cells of the wing with scattered brown dots.

Male, length, 8.2 mm.; wing, 9.6 mm.

Rostrum and palpi dark brown; antennæ with the scapal segments dark brown with a gray bloom, flagellar segments brown; front, vertex and occiput with a broad light gray median stripe, the region adjoining the eye rich yellowish brown.

Pronotum light gray; mesonotal præscutum light gray, with a linear rich rust brown streak on either side of the median line near the pseudosuture, two brown spots on either side near the transverse suture; scutum, scutellum and postnotum light gray, the latter broadly margined with dark brown behind. Pleuræ, propleuræ brown with a yellow bloom, mesopleuræ dark brown, the metapleuræ even darker. Halteres light yellow throughout. Legs, fore coxæ yellowish with a slightly darker bloom, trochanters yellow above, brown beneath, femora yellowish becoming browner before the tip, tibiæ yellow, brown at the tip, tarsi yellowish, each segment tipped with brown; middle and hind legs similar but the coxæ and trochanters are brown. Wings long and narrow, rather pointed at the tip, hyaline with yellow veins; conspicuous brown marks as follows: one at the base of cell *R*, a second at the origin of *R*_s, a third, larger, including the tip of *Sc*, the fork of *R*₂₊₃ and down the cord to cell 1st *M*₂; a fourth, very large blotch, occupying the ends of cells 2d *R*₁, *R*₂ and *R*₃; a few scattered dots at the ends of the veins and in most of the cells. Venation, see Pl. 2, fig. 9.

Abdominal tergites yellowish brown, brightest medially, the apical sclerites rather darker; sternites yellowish brown.

Holotype, ♂, Valle de las Papas, March 29, 1912.

This species is dedicated to the collector, Mr. J. T. Lloyd.

This species suggests *Lecteria conspersa* Enderlein¹ (Brazil) in its wing pattern but in all other respects is quite different. It also bears a resemblance to *Limnophila guttulatissima* Alexander (Guatemala),² in which the thorax is pale brown spotted with darker brown and the wings with a greater abundance of brown dots.

16. **Limnophila orophila** new species.

Blackish, wings dull yellowish, crossveins *r* and *m* lacking.

Male, length, 5-5.2 mm.; wing, 5.3-5.7 mm.

Rostrum and palpi dark brownish black; antennæ black, the 2d segment

¹ Gunther Enderlein, Zoöl. Jahrb., Vol. 32, Pt. 1, pp. 49, 50 (1912).

² C. P. Alexander, Proc. U. S. Nat. Mus., Vol. 44, No. 1966, p. 546.

large, rounded, flagellar segments rounded oval, gradually decreasing in size to the tip; front, vertex and occiput dull black with a sparse grayish bloom.

Thorax black with a sparse brownish bloom on the sides of the præscutum adjoining the pseudosuture, scutum, scutellum and postnotum black with a brownish bloom. Pleuræ black with a brown bloom. Halteres, stem light brown, knob darker. Legs, coxæ and trochanters dull brownish yellow, remainder of the legs dark brownish black. Wings with a dull yellow suffusion, no stigmal spot, veins yellow. Venation, crossveins *r* and *m* obliterated, cell M_1 gone by the fusion of M_1 and M_2 , basal deflection of Cu_1 beyond the fork of M .

Abdomen black, the hypopygium a little browner. Male genitalia with the pleural lobes rather stout, with two apical appendages, the more dorsal, fleshy basally and here with long hairs, chitinized on the apical half, the tip deeply bifid; the ventral appendage is subchitinized, cylindrical, simple, the tip rounded.

Holotype, ♂, Almaguer, March 11, 1912.

Paratypes, 2 ♂, with the type.

Subfamily TIPULINÆ.

Tribe TIPULINI.

Genus PACHYRHINA Macquart.

17. *Pachyrhina alleni* new species.

Head black, reddish around the base of the antennæ; thorax with the predominating color black with narrow yellow lines and spots; abdomen with the basal half yellowish red, the tip black; wings with a pale brown suffusion.

Male, length, 10.6–11.2 mm.; wing, 11–12 mm.; antennæ, about 3.5–4 mm.

Rostrum and palpi dark brownish black; antennæ short, blackish, the flagellar segments very short, cylindrical, scarcely concave on the inner face, terminal antennal segments shorter and more slender; frontal tubercle and region around the base of the antennæ dull orange-yellow, frontal prolongation of the head, vertex and occiput dark brownish black, genæ provided with abundant long black hairs.

Pronotum dark brownish black, the scutum broadly bright yellow above. Mesonotal præscutum orange-yellow, with three very broad black stripes which almost conceal the ground color, the median one very broad in front, narrowed to a point behind at the suture, the lateral stripes begin behind the conspicuous straight pseudosuture and run caudad, interrupted by a dull yellow patch on the lateral angles behind; the yellow ground color of the præscutum is broadest in front before the pseudosuture, almost obliterated behind; scutum dull yellow, each lobe with a conspicuous black blotch, these being caudal extensions of the

lateral præscutal stripes; scutellum dull brown, darker, blackish, anteriorly brighter, yellowish on the sides, this color continued cephalad onto the lateral margins of the scutum; postnotum dark brownish black with a dull yellow blotch on the cephalic margin, one on either side of the median line. Pleuræ brownish black, paler dorsally, an elongate yellow blotch on the extreme lateral edge of the præscutum, appearing pleural in position, just above the anterior spiracle; tegula conspicuous, bright yellow; a conspicuous yellow stripe on the side of the postnotum, also appearing to be pleural in position, this stripe being cephalad of the base of the halteres and cephalo-dorsad of the mesospiracle. Halteres light brown. Legs, coxæ and trochanters light brown, the former darker basally, femora light brownish yellow, the fore femora darker, brownish, tibiæ brown, tarsi broken. Wings with a uniform pale brownish tinge, cells *C* and *Sc* a little brighter, stigma brown, veins dark brown. Venation (see Pl. 4, fig. 5): *Cu*₁ fuses with *M* for a distance about equal to the crossvein *r-m* and breaks away before the fork of *M*.

Abdominal tergites 1 and 2 reddish brown, 3 reddish yellow with a brown blotch near the base, 4 reddish yellow, 5 to 9 dark brownish black; sternites 1 to 4, reddish yellow, 5 to 6 similar, the caudal margins of the sclerites broadly blackish, segments 7 and 8 dark brownish black, the latter at the tip densely clothed with bright orange hairs. Hypopygium with the 9th tergite having an oval notch, the caudal margin with abundant chitinized points and denticulæ. Pleural suture long, prominent; pleura bearing two lobes, the outer lobe fleshy, very broad and flat, provided with dense hairs, its tip pointed; the inner lobe is large, chitinized, especially on the cephalic margin, where it is produced into a large appressed tooth. (See Pl. 4, fig. 8.)

Holotype, ♂, Valle de las Papas, March 29, 1912.

Paratype, ♂, with the type.

This species is named in honor of Dr. A. A. Allen of Cornell University.

P. alleni is allied to *usta* Osten Sacken of Costa Rica (Biol. Cent. Amer. Dipt., Vol. 1, pp. 17, 18) in the predominance of the black color on the thorax. It differs in many respects, having much more dark color on the head, abdomen with the basal half reddish yellow, not black, etc.

18. *Pachyrhina nigrolutea* Bellardi.

1859. *Tipula nigrolutea* Bellardi, Ditterologia Messicana, Vol. I, p. 11.

One female from Popayan, March 1, 1912, by sweeping.

Genus **TIPULA** Linnæus.19. *Tipula carizona* new species.

Monilifera group; wings light brown, subhyaline markings scanty; abdomen yellowish brown, trivittate with darker brown.

Male, length, 11.4-13.2 mm.; wing, 13.3-14.5 mm.; antennæ, 9 mm.

Palpi dark brown; antennæ of the *monilifera* type of structure, scapal segments light yellowish brown, third segment with the basal half yellowish brown, passing into dark brown at the tip, remainder of the antennæ dark brown; frontal prolongation of the head brown with a gray bloom; front, vertex and occiput light gray with three longitudinal brownish stripes, one median and one along either inner margin of the eye.

Pronotum light gray, with a very narrow and indistinct median brown mark, sides of the sclerites darker. Mesonotal præscutum light gray, with darker longitudinal stripes as follows: a very narrow brown median stripe extending the length of the sclerite, on either side of this, narrowly separated by a strip of the ground color, is a gray band, behind the pseudosutural or humeral region begin the abbreviated grayish lateral stripes, sides of the sclerite brown, much of the gray ground color is speckled with dark brown; scutum gray, with the lobes brown, a dark brown median spot on the caudal margin of the sclerite, this running back across the scutellum as a median vitta; scutellum very pale gray, with the caudal margin broadly dark brown; postnotum clear gray, with a conspicuous dark brown median stripe and a spot of the same color on the sides of the basal half of the sclerite. Pleuræ light gray, with large indistinct markings of brown. Halteres light brown, the knob a little darker. Legs, coxæ light brown, with a gray bloom, trochanters and femora light brown, the latter broadly dark brown apically, tibiæ brown, the dark tip still broader, tarsi dark brown. Wings with a rather uniform light brown suffusion, stigma a little darker brown, a subhyaline spot beyond the stigma in cell *2d R*₁, a second along the cord, most noticeable in cells *1st M*₂ and base of *M*₃. Venation as in Pl. 4, fig. 7.

Abdominal tergites yellowish brown, with a dark brown median stripe extending to the 8th segment, lateral margins of the sclerites dark brown; sternites yellowish, becoming much more infuscated along the apical segments. Male hypopygium: 9th tergite from above with the caudal margin deeply and broadly incised, this broad notch with a median protuberance which is again incised by a triangular cut, ventral margin of the 9th tergite produced into a rounded lobe. 8th sternite produced caudad into a long flat point, which is densely clothed with long hairs, viewed from beneath this appendage is seen to be constricted at the extreme base, soon widening. 9th sternite rather large, the pleural piece complete, oval, bearing three appendages, the more dorsal being long, slender, fleshy and directed dorsad, clothed with long pale hairs; the more ventral appendage projecting caudad from the ventro-caudal angle of the sclerite, short, densely clothed with short appressed hairs; the median appendage is largest and longest, its base about as wide as the length of the pleura, the appendage narrowed before the enlarged axe-like tip,

which is chitinized on its apical margin. Central vesicle small with a prominent apophyse directed dorsad and cephalad; the penis is short and proportionately thick, its walls with numerous transverse lines, the base of the penis scarcely anterior to the central vesicle. Other prominent appendages of the genital chamber are a pair of chitinized flattened pieces on either side of the penis, on the dorsal margin produced dorsad into spoonlike points. (See Pl. 4, figs. 2-4.)

Holotype, ♂, Valle de las Papas, March 29, 1912.

Allotype, ♀, with the type.

Paratypes, 10 ♂, March 22 to 29, 1912, with the type. One ♂ from Almaguer, March 11, 1912.

Variations: in some specimens, the shaft of each of the flagellar segments is much paler, yellowish brown, than the swollen base. In many individuals the thorax lacks the gray bloom which produces this body color but this is probably due to the condition of the specimens. The wings of some with an indistinct subhyaline band beginning before the stigma and running obliquely toward the base of the wing.

The specific name is that of a native Indian tribe; spelled also "carijona." They inhabit the banks of the upper Yapura River.

T. carizona is related to *moniliformis* Röder¹ but I cannot identify this as Röder's species. *Moniliformis* is described as having yellowish and hyaline conspicuously diversified wings, whereas in *carizona* the wings are pale brown with the whitish or subhyaline markings very reduced. The thorax in *moniliformis* is brown without distinct stripes, in *carizona* gray, vittate with darker; no mention is made in the description of *moniliformis* of the conspicuous trivittate condition of the abdominal tergum. In *monilifera* Loew the wing pattern is also conspicuously diversified brown and white; here the caudal prolongation of the 8th sternite is much shorter, the penis much longer and more slender, the shapes of the 9th tergite and the median pleural appendage quite different and the 9th sternite produced into a conspicuous median lobe.

20. *Tipula monilifera* Loew.

1851. *Tipula monilifera* Loew, Linnæa Entomol., Vol. 5, p. 404; Pl. 2, figs. 26-27.

One male from Popayan, March 1, 1912, and another male from the Valle de las Papas, March 29, 1912.

¹ Victor von Röder, Stett. Ent. Zeit., 1886, pp. 259, 260.

21. *Tipula moccoa* new species.

Size medium (wing, ♀, 20 mm.); color light brown, thorax with five darker brown lines, the median one narrowest, femora brown, with a conspicuous yellow subapical ring, wings hyaline variegated with numerous gray and brown blotches.

Female, length, about 18 mm.; wing, 20.8 mm.

Palpi and frontal prolongation of the head dark brown; antennæ with the scapal segments yellowish, first flagellar segment with the basal two thirds light brown, remainder yellow, next five segments with the basal third black, rest yellow, apical flagellar segments dark brownish black; vertex and occiput dark grayish brown, the region adjoining the eye paler, yellowish.

Pronotum dark brown, darkest medially. Mesonotal præscutum light brown, with darker brown stripes, the median one very narrow and runs the length of the sclerite; on either side of it is a broader brown stripe which bends slightly distad near the middle of the sclerite and then becomes confluent with the median stripe near the suture, in front spreading out and occupying the region in front of the pseudosuture, lateral stripes rather short surrounded by the pale ground color of the præscutum, sides of the sclerite behind rather bright yellowish; scutum gray, the lobes with two dark brown spots of which the anterior one is the smaller; scutellum and postnotum dull yellow with a narrow brown median line. Pleuræ grayish with two large blotches on the mesepipleuræ. Halteres brown, the knob a little yellowish. Legs, coxæ brownish yellow, gray pollinose, trochanters dull yellow, femora dull yellow basally, soon darkening to the tip with a broad yellow subapical ring, tibiæ and tarsi brown. Wings hyaline, cell *C* pale yellowish brown, wings with numerous gray and brown clouds on the disc as follows: a large one at the stigma, at the fork of *Cu*, in the anal cells, in the middle of cell *M*, at the origin of *Rs* and in the middle of cell *R*; a gray blotch in the radial cell and clouds at the ends of the longitudinal veins. Venation as in Pl. 4, fig. 6.

Abdominal tergites rich brown with indications of a darker dorsal stripe, pleural region a little browner, especially on the basal segments, sternites yellowish brown. Ovipositor with the tergal valves very long and slender, the tips rather obtuse, sternal valves rather long, slender, extending about one half the length of the upper valves.

Holotype, ♀, Valle de las Papas, March 29, 1912.

The specific name is that of a native Indian tribe, dwelling on the banks of the upper Caqueta.

22. *Tipula miranha* new species.

Size large (wing, ♀, 25 mm. or over); color yellowish, thorax with three brown stripes, the median one bisected, abdomen brown or yellowish brown, with three darker brown lines on the tergum and a median one on the sternum, wings infused with brownish yellow.

Female, length, 20-22 mm.; wing, 25-26.5 mm.

Palpi brown, frontal prolongation of the head rich orange yellow, brownish beneath; antennæ with the scapal segments very small, dull yellow, flagellum broken; front, vertex and occiput orange yellow with a narrow, indistinct brown median line, sides of the vertex and the genæ a little suffused with brown.

Pronotum dull yellow, a little brown on the sides and on the median line. Mesonotal præscutum dull brownish yellow with three dark brown lines, of which the median one is double, being bisected by a pale line, the median stripe is broadest in front, where it spreads out over the sclerite, narrowed behind, the lateral stripes are much shorter, elongate oval; scutum dull brownish yellow, each lobe with two large brown spots; scutellum dull yellow, pale brown on the sides; postnotum dull yellow with a moderately broad pale brown median line and a rounded pale brown spot on either side in front. Pleuræ dull brownish yellow, becoming more brownish on the mesosternum. Halteres brown, paler at the extreme base. Legs, coxæ yellowish brown, trochanters similar, femora light brownish yellow, the tip narrowly brown, tibiæ brown, the tips scarcely darker, tarsi brown. Wings with a pale brown suffusion, costal and subcostal cells more yellowish, stigma brown, veins yellowish brown. Venation as in Pl. 4, fig. 7.

Abdominal tergites yellowish brown, with a moderately broad median brown stripe which spreads out on the 6th and 7th segments, a broad, irregular lateral band near the margin of the tergites; sternites dull yellow, with a broad brownish median stripe. Ovipositor with the tergal valves very long and slender, flattened and rather gradually narrowed to the rather acute tips; sternal valves very short, extending only beyond the base of the tergal valves, the tips, viewed from the side, obtusely rounded.

Holotype, ♀, Valle de las Papas, March 29, 1912.

Paratype, ♀, with the type.

The specific name is that of a native Indian tribe, dwelling on the middle Putumayo River.

T. miranha is allied to *T. paulseni* Philippi (Chile) in its unmarked wings, color of the antennæ, etc.; the thorax and abdomen are not gray or grayish, however.

EXPLANATION OF PLATES.

PLATE IV.

Upper figure, view in the Valle de las Papas, Colombia, showing the 'paramo' conditions.

Lower figure, view in the 'cloud' forest, near the Valle de las Papas.

Photos by John Thomas Lloyd.

PLATE V.

- Fig. 1. Wing of *Dicranomyia cordillerensis* n. sp.
 Fig. 2. Wing of *D. elegantula* n. sp.
 Fig. 3. Wing of *D. longiventris* n. sp.
 Fig. 4. Wing of *Atarba columbiana* n. sp.
 Fig. 5. Wing of *Erioptera andina* n. sp.
 Fig. 6. Wing of *Gonomyia andicola* n. sp.
 Fig. 7. Wing of *Oromyia lloydi* n. sp.
 Fig. 8. Wing of *Epiphragma cordillerensis* n. sp.
 Fig. 9. Wing of *Limnophila lloydi* n. sp.

PLATE VI.

- Fig. 1. Hypopygium of *Dicranomyia insignifica* Alexander. Ventral aspect.
 Fig. 2. Hypopygium of *Dicranomyia longiventris* n. sp. Ventral aspect. *v* = ventral pleural lobe; *p* = guard of the penis; *t* = 9th tergite from beneath.
 Fig. 3. Hypopygium of *Gonomyia andicola* n. sp. Dorsal aspect. *t* = 9th tergite from above; *pl* = pleura.
 Fig. 4. Hypopygium of *Molophilus perseus* n. sp. Ventral aspect, showing the ventral edge of the pleura.
 Fig. 5. Hypopygium of *Molophilus perseus* n. sp. Ventral aspect, showing the dorsal edge of the pleura.
 Fig. 6. Hypopygium of *Erioptera andina* n. sp. Dorsal aspect. *t* = 9th tergite from above.
 Fig. 7. Hypopygium of *Oromyia lloydi* n. sp. Ventral aspect. *8s* = 8th sternite; *9s* = 9th sternite.
 Fig. 8. Hypopygium of *Oromyia lloydi* n. sp. Lateral aspect. *9s* = 9th sternite; *pl* = pleura.
 Fig. 9. Hypopygium of *Oromyia lloydi* n. sp. Pleura and appendages.

PLATE VII.

- Fig. 1. Wing of *Tipula miranha* n. sp.
 Fig. 2. Hypopygium of *Tipula carizona* n. sp. Lateral aspect. *8s* = 8th sternite; *9s* = 9th sternite; *pl* = pleura; *9t* = 9th tergite.
 Fig. 3. Hypopygium of *Tipula carizona* n. sp. The penis and its vesicles.
 Fig. 4. Hypopygium of *Tipula carizona* n. sp. The pleura and its appendages from a ventro-lateral aspect.
 Fig. 5. Wing of *Pachyrhina alleni* n. sp.
 Fig. 6. Wing of *Tipula mocoa* n. sp.
 Fig. 7. Wing of *Tipula carizona* n. sp.
 Fig. 8. Hypopygium of *Pachyrhina alleni* n. sp. Pleural appendages; *o* = outer appendage.